

Report of the Screw Worm Outbreak in Alabama and Mississippi with Notes
on Occurrence of the Fly in Tennessee and Arkansas.

A. & M. College, Entomological, Animal Husbandry, and Veterinary Departments, Cooperating

By

O. G. Babcock, Assistant Entomologist, U. S. Bureau of Entomology

Due to the efforts of Senator Pat Harrison of Mississippi, a call was sent out to a few of the workers in Entomology under Dr. Bishopp, Direct Supervisor, to report at Gulfport, Mississippi, for the formulation of screw worm control plans. This meeting terminated in a wholehearted cooperative plan between the several States, Agricultural Colleges, the Extension Service, County and District Agents, and the F. E. R. A. The Entomological personnel at the Gulfport meeting, under the direction of County Agent Hinds, were Dr. F. C. Bishopp and Mr. M. P. Jones of Washington, Mr. E. W. Laake of Dallas, Texas, Mr. D. C. Farman of Uvalde, Texas, and O. G. Babcock, Sonora, Texas.

A brief survey very quickly proved that a real emergency existed in all States bordering on the Gulf of Mexico from East Texas to Florida. On the whole the infestation extended inland approximately 75 to 100 miles. It was also learned that this was the first real screw worm outbreak since about 1900 to 1904, or approximately 30 to 35 years.

Report of the Survey Work Outbreak in Alabama and Mississippi with Notes
on Occurrence of the Fly in Tennessee and Arkansas.

A. & M. College, Entomological, Animal Husbandry, and Veterinary Depart-
ments, Cooperating

BY

O. G. Babcock, Assistant Entomologist, U. S. Bureau of Entomology

Due to the efforts of Senator Pat Harrison of Mississippi, a bill
was sent out to a few of the workers in Entomology under Dr. Bishop,
District Supervisor, to report at Gulfport, Mississippi, for the formation
of survey work control plans. This meeting terminated in a wholehearted
cooperative plan between the several States, Agricultural Colleges, the
Extension Service, County and District Agents, and the U. S. A. The
Entomological personnel at the Gulfport meeting, under the direction of
County Agent Hinds, were Dr. F. C. Bishop and Mr. M. F. Jones of Washing-
ton, Mr. E. W. Lamm of Dallas, Texas, Mr. H. C. Farnum of Uvalde, Texas,
and O. G. Babcock, Bonham, Texas.

A brief survey very quickly proved that a real emergency existed
in all States bordering on the Gulf of Mexico from East Texas to Florida.
On the whole the infestation extended inland approximately 75 to 100 miles.
It was also learned that this was the first real survey work outbreak since
about 1900 to 1904, or approximately 70 to 75 years.

DISTRIBUTION

A later and more detailed study showed that the distribution, although general, was nevertheless more or less uneven. In Mississippi, Wilkinson and Adams Counties situated in the extreme southwestern corner, were lightly infested. There were very few animals in these Counties. The other two tier of Counties, Jefferson, Franklin, Amite, Lincoln, Pike, Lawrence, Walthall, Mariann, Pearl River, Hancock, Stone, Harrison, George, and Jackson were very badly infested, while Jeff Davis, Lamar, Covington, Jones, Wayne, Forrest, Perry, and Green were badly infested. From this line of Counties north to a line extending from Vicksburg through Jackson to Meridian the infestation would be considered as medium. North of this line screw worms were considered as scarce but late in October considerable trouble developed at DeKalb, Miss., about 30 miles north of Meridian.

No evidence of the screw worm fly trouble could be found in the north west corner of the Delta region, i.e., Desoto, Tunica, Coahoma, and Bolivar Counties. East of the Delta in the hilly country reports gave information to the effect that there was a trace of the fly. The natives reported a few cases of worms every year during the summer months. No noticeable increase was indicated except at Grenada, Mississippi, where there were 5000 relief cattle. From here south to Jackson only local cases occurred. Apparently very few, if any, screwworms are known along the Delta to Vicksburg, but from here south in the hilly country there is a decided increase in screw worm troubles.

DISTRIBUTION

Report of the Survey of the Mosquitoes of the State of New York, 1904, by J. J. Truxton, Chief of the Bureau of Entomology and Plant Quarantine.

A. A. later and more detailed study showed that the distribution, although
General, was nevertheless more or less uneven. In Massachusetts, Wisconsin and
Adams Counties situated in the extreme southwestern corner, were slightly in-
fested. There were very few animals in these Counties. The other two tiers
of Counties, Jefferson, Franklin, White, Lincoln, Pike, Lawrence, Wetzel,
Marshall, Perry, River, Hancock, Boone, Harrison, George, and Jackson were very
badly infested, while Jefferson, Boone, Harrison, Boone, Harrison, Boone,
Perry, and Green were badly infested. From this line of Counties north to
a line extending from Richmond through Jackson to Madison the infestation
would be considered as medium. North of this line fewer were considered
as scarce but late in October considerable numbers were observed at Norfolk, Mass.,
about 50 miles north of Madison.
No evidence of the survey was found in the
north west corner of the State region, i. e., Essex, Union, Cochet, and
Bellevue Counties. Most of the hills in the hilly country reports gave in-
formation to the effect that there was a trace of the fly. The natives
reported a few cases of worms every year during the summer months. No
noticeable increase was indicated except at Grinnell, Massachusetts, where there
were 5000 killed cattle. From here south to Jackson only local cases oc-
curred. Apparently very few, if any, were known to have been along the hills
to Washington, but from here south in the hilly country there is a decided
increase in some worm troubles.

West of Memphis, Tennessee, in Arkansas, no screw worm cases could be found in the Delta area, not even east of Turrell where there were a few hundred head of native cattle. The same holds true westward to the hilly country. At Harrisburg, Wynne, and Forrest City there was a light infestation averaging one per cent, in relief cattle. Here it was learned that the relief cattle shipped in were branded at Kansas City with the paint brand. This branding paint continued to burn; the scabs formed in Arkansas, peeled and became infested in the hilly country.

There were no infestations of screw worms about Memphis as was expected, although the fly was there as one specimen was captured a few miles east of the city limits. Southwestern Tennessee seemed to be free of the pest. The same apparently holds good for northeastern Mississippi as none were found. A Dr. Troup, an Alabama graduate, has lived and practiced in Corinth Miss., for 21 years and states that he has never had a case of screw worms.

The northeastern corner of Alabama seemed to be free of the maggots, but upon entering Tennessee a number of cases were reported, especially from Lawrence and Columbia east to Shelbyville and Fayetteville, wherever the Southdown sheep are raised. Here the sheep are raised in small bunches to produce early market lambs. The farmers here made more from their lambs than from cotton. Breeding is regulated largely according to the market, nevertheless considerable trouble is experienced yearly from the attacks of the screw worm fly.

West of Memphis, Tennessee, in Arkansas, no other cases could

be found in the latter area, not even east of Turrell where there were a

few hundred head of native cattle. The same holds true westward to the

Mississippi county. At Harrisonburg, Tennessee, and Forrest City there was a light

infestation averaging one per cent, in relief cattle. Here it was

learned that the relief cattle shipped in were branded at Kansas City

with the point brand. This branding point continued to burn; the escape

formed in Arkansas, pooled and became infested in the Mississippi county.

There were no infestations of screw worms about Memphis as was

expected, although the fly was there as one specimen was captured a few

miles east of the city limits. Northwestern Tennessee seemed to be free

of the pest. The same apparently holds good for northeastern Mississippi

as none were found. Dr. Troup, an Alabama graduate, has lived and prac-

ticed in Georgia since 1901 and states that he has never had a

case of screw worms.

The northeastern corner of Alabama seemed to be free of the maggot,

but upon entering Tennessee a number of cases were reported, especially

from Lawrence and Columbia east to Shelbyville and Fayetteville, wherever

the Southern sheep are raised. Here the sheep are raised in small bunches

to produce early market lamb. The farmers here make their lamb

than from cotton. Breeding is regulated largely according to the market,

nevertheless considerable trouble is experienced yearly from the attacks

of the screw worm fly.

Extending south from Polaski, Tennessee into Alabama, only occasional cases reported, as from Huntsville, Guntersville, Boaz, Gadsden, and Tuscaloosa; however, from Eufaula almost east to Auburn, Alabama, there was more or less screw worm trouble, the infestation increasing in severity as the coast was approached. The heaviest infestation centered about Washington, Mobile, Clarke, and Baldwin counties. These counties could be considered as bad to very bad. It seemed that the southern and southeastern part of the state was not nearly as severely infested as in the southwestern corner.

It is interesting to note that Washington County was infested long before Baldwin County. The first report for the lower end of Baldwin County was about October 9th. On October 29th the estimated percent of infested calves was placed at five per cent.

RELATION TO LIVESTOCK

In making the survey it was noticed that the greatest number of cases reported were from counties where considerable livestock prevailed. It was also observed that wherever relief cattle were shipped in from screw worm areas there were more flies as well as more wormy cases. No doubt many screw worms were brought in in this way to add to the all ready developing outbreak.

A few exceptionally bad cases were observed in west and south Mississippi.

calves was placed at five per cent. On October 25th the estimated percentage of infected before Baldwin County. The first report for the lower end of Baldwin County is interesting to note that Washington County was infected long before Baldwin County. It is not nearly as severely infected as in the southwestern corner. It seemed that the southern and southwestern part of the Mobile, Mingo, and Baldwin counties. These counties could be considered as worst off. The heaviest infection centered about Washington. The infection interesting in severity as the most at least some were terrible. From Kansas almost west to Indiana, Alabama, there was cases reported, as from Louisville, Kentucky, and Ohio. Extending south from Indiana, Tennessee into Alabama, only occasional

A few exceptionally bad cases were observed in west and south
lag entirely. The weather was very warm in the water.
Many more were brought in in this way on the all ready davies.
With these there were more flies as well as more worm cases. No doubt
it was also observed that whenever white cattle were shipped in from some
cases reported were from countries where considerable livestock prevalence
In making the survey it was noticed that the greatest number of

English

LINE OF MIGRATION

At best this can only be generalized upon, yet the effort is worthwhile, based upon the 1934 season's work. The screw worm fly dies out in west Texas every winter, therefore, it must migrate in from Old Mexico every year. Just what part the air currents and steady prevailing winds play cannot be definitely stated with the scant amount of knowledge now collected.

It is also known from statements gathered from many of the older settlers in Mississippi that there was an outbreak some 30 to 35 years ago. Minor outbreaks have undoubtedly occurred since then. Mr. D. C. Farman has records of the fly in Mississippi in past years. O. C. Babcock observed screw worm flies about dead fish along the Mississippi River some seventeen years ago. What brought the fly into this territory for the present outbreak, is the question.

From what could be gathered from the survey made in Mississippi, Alabama, Southwestern Tennessee, and East Central Arkansas, the yearly occurrence of the fly closely follows a line from northern Louisiana, south central Arkansas, skips over the Mississippi Delta region and northern Miss., to break out again in the small sized sheep farming section south of Nashville, Tennessee and apparently extending east and northeast wherever the sheep industry is developed. Another line of migration probably branches off in northern Louisiana and extends northeast from south central Arkansas in to the eastern hills of Arkansas and playing out somewhere along the Missouri boundary.

LINE OF MIGRATION

At least this can only be generalized upon, for the effort is

worthwhile, based upon the 1934 season's work. The notes seem to

show out in west Texas every winter, therefore, it must migrate in large

Old Mexico every year. Just what part the air currents and steady pre-

vailing winds play cannot be definitely stated with the usual amount of

knowledge now collected.

It is also known from statements gathered from many of the older

settlers in Mississippi that there was an outbreak some 30 to 35 years ago.

Minor outbreaks have undoubtedly occurred since then. Dr. J. C. Harman

has records of the fly in Mississippi in past years. O. L. Bennett of

gave some notes about 1840 along the Mississippi River some

seventeen years ago. That brought the fly into this territory for the

present outbreak, is the question.

From what could be gathered from the survey made in Mississippi,

Alabama, southeastern Tennessee, and east central Arkansas, the yearly

occurrence of the fly closely follows a line from north in Louisiana, south

central Arkansas, thence over the Mississippi valley region and northern Miss.

to break out again in the small area sheep raising section south of Wash-

ville, Tennessee and apparently extending east and northeast wherever the

sheep industry is developed. Another line of migration probably branches

off in northern Louisiana and extends northeast from north central Arkansas

in to the eastern hills of Arkansas and playing out somewhere along the

Missouri boundary.

Bay Minette, 10/30.1934

DETAILED SURVEY OF ALABAMA MADE BY AUTO AND EXTENDING INTO
TENNESSEE AND EAST ARKANSAS AND NORTH WEST MISSISSIPPI

Foley, 10/29/1934

No carrion found on coast. Cattle fat, feeding upon tall grass growing in sand dunes. No screw worm flies were observed on the shore. This was about the only place in Alabama where the cattle were observed to be fat outside of the limestone area extending across the state. The first flies observed were in the neighborhood of Foley about October 9th. The fly attack is now quite severe and doing considerable damage. All newly born and castrated animals are infested. There is a fairly good number of cattle in this area and all doing well. Flies were observed about carcass on beach of Island south of Pascagoula, Mississippi.

Mr. G. B. Childress, a small ranch owner and inspector for Dr. Curry, stated that "there are spots near the coast and Foley where it never freezes" and Mr. Cockerham of the Biloxi Entomological laboratory also stated that one or more of the inlets produced vegetables yearly two weeks before the surrounding country.

Bay Minette, 10/30.1934

At a meeting called by County Agent Hale, Mr. Babcock was called upon to address some forty people. Here it was learned that the screw worm fly was present at Little River, Alabama, 15 days before they appeared at Bay Minette, and first appeared at Foley on the seventh of October. It was also learned that the natives never heard of nor knew of the fly before the relief cattle were shipped in. A ranchman from Florida also reported the fly as

Day, 10/10/1934

DETAILS SURVEY OF ALABAMA MADE BY AUTO AND KAYAKING INTO
TERRAIN AND EAST ALABAMA AND NORTH WEST MISSISSIPPI

Day, 10/10/1934

No cotton found on coast. Cotton has, feeding upon tall grass
growing in small areas. No cotton worm flies were observed on the shore.
This was about the only place in Alabama where the cattle were observed
to be fed outside of the limestone area extending across the state. The
first flies observed were in the neighborhood of Foley about October 9th.
The fly attack is now quite severe and doing considerable damage. All
heavily born and castrated animals are infested. There is a fairly good
number of cattle in this area and all doing well. Flies were observed
about 2000 on beach of Island south of Pensacola, Mississippi.

Mr. J. H. Griffith, a small ranch owner and inspector for the
Curry, stated that there are spots near the coast and Foley where it never
freezes and Mr. Griffith of the Allied International Laboratory also
stated that one or more of the insects produced vegetation yearly two weeks
before the surrounding country.

Day, 10/10/1934

As a meeting called by County Agent H. H. Haddock was called upon
to discuss some forty people. None of them seemed that the cotton worm fly
was present at Little River, Alabama, 15 days before they appeared at Foley.
Minutes, and first appeared at Foley on the seventh of October. It was also
learned that the natives never heard of nor knew of the fly before the relief
cattle were shipped in. A ranchman from Florida also reported the fly as

serious to livestock about Miami, Florida, since relief cattle were shipped in, but that every effort was being made to suppress the publicity of the pest.

Blacksher, 10/28/1934

It was learned in this district that nine out of sixty head, or 15 per cent of the cattle were infested, exclusive of calves which was considered much higher.

Uriah, 10/28/1934

At least five per cent of all native cattle are known to be infested, all cattle being native there being no relief cattle. One man reported 7 out of 22 or 31.8 per cent of cattle infested. Along the side of the road 29 miles west of Uriah a freshly killed yearling was found. The fly population about the carcass was approximately 4 per cent Cochliomyia, 94 per cent Lucilia sp., one per cent Phormia regina, or the black blow fly, and one per cent Calliphora species. This observation was made at the close of a cool norther.

Monroville, 10/29/1934

On the river there were approximately 400 head of relief cattle. Exclusive of young animals three per cent of the native cattle were infested. One farmer reported 3 out of 12 hogs or 25 per cent wormy, no cows; another reported one of ten yearling calves or 10 per cent wormy and one out of 13 hogs or 7.69 per cent; while another man reported 3 hogs and goats wormy. A good many grade goats are raised in this section

persons to livestock about Miami, Florida, which killed cattle were
shipped in, but that every effort was being made to suppress the
epidemic of the pest.

Disinfectant, 10/25/1914
It was learned in this district that nine out of thirty head, or
30 per cent of the cattle were infected, exclusive of calves which was
the considered much higher.

Uxian, 10/25/1914
At least five per cent of all native cattle are known to be in-
fected, all cattle being native there being no killed cattle. One man
reported 7 out of 25 or 28 per cent of cattle infected. Along the
side of the road 50 miles west of Uxian a freshly killed yearling was
found. The fly population about the carcass was approximately 1 per
cent Cochranella, 9 per cent Leishmania, one per cent Phlebotomus,
or the black fly fly, and one per cent Calliphora species. This dis-
section was made at the close of a cool morning.

Hemovillia, 10/25/1914
On the river there were approximately 100 or 1 of killed cattle.
Exclusive of young animals three per cent of the native cattle were dis-
sected. One farmer reported 7 out of 12 hogs or 58 per cent wormy, no
cows; another reported one of ten yearling calves or 10 per cent wormy
and one out of 17 hogs or 5.88 per cent; while another man reported 7
hogs and goats wormy. A good many Phlebotomus were raised in this section

for chevon consumption. No pure Angoras were observed.

Andalusia, 10/29/1934

There were 25,000 head of native cattle reported for the southern part of the county. The field man, ^{of the health department} comes in contact with ten times more people in the field than the County Agent. He claims that there is not more than five per cent of the cattle infested, but that 95 to 100 per cent of the summer born calves are infested. One farmer reported to me that he had one hog out of twenty-five infested. Medicines used in this county consisted of benzol, chloroform, and a patent medicine known as Lone Star. It was later learned that this killer and repellent was manufactured in Birmingham and consisted of benzol, chloroform, and pine tar oil.

Enterprise, 10/28/34

Located in Coffee County is a graduate Veterinarian, Dr. G. C. Walding, a very practical, successful, and influential Veterinarian. He reports a "small amount of screw worm cases during the season of 1933 but not bad until 1934, from August on." Mr. Hugh ^Wexton is County Agent, located at Enterprise. The Veterinarian is using benzol and chloroform, according to the case, and pine tar oil as a repellent.

for chicken consumption. No more chickens were observed.

Interview, 10/25/74

There were 55,000 head of native cattle reported for the southern part of the county. The field men came in contact with ten times more people in the field than the County Agent. He claims that there is not more than five per cent of the cattle infected, but that 95 to 100 per cent of the summer born calves are infected. One farmer reported to me that he had one out of twenty-five infected. Medicines used in this county consisted of benzol, chloroform, and a potent medicine known as Iona 200. It was later learned that this killed and repelled was maintained in Wisconsin and consisted of benzol, chloroform, and pine tar oil.

Interview, 10/25/74

located in Coffee County is a Graduate Veterinarian, Dr. G. J. Valdez, a very practical, successful, and influential Veterinarian. He reports a "small amount of severe worm cases during the season of 1933 but not bad until 1934, from August on." Mr. Ralph Eaton is County Agent located at Hefner. The Veterinarian is using benzol and chloroform, according to the cases, and gives tar oil when reported.

Elba, 10/27/1934

The native citizenship never heard of nor ever saw the scree worm before three weeks ago, or about October 6th. Here the farmers were using chloroform and crude run pine tar and the Lone Star patent medicine. Several wormy cases were personally examined 14 miles east of Elba. Two out of three yoke of oxen were infested in cuts on belly and legs. These oxen were in actual service hauling logs. Three hogs out of 30 head were infested, naval and mouth. No relief cattle in county.

Union Springs, 10/27/1934

Five thousand relief cattle were shipped into this county, but the screw worm fly was here before the relief cattle. There were 10 cases out of 180 cows, or 5.5 per cent infested, whereas of the native cattle there were reported 30 cases out of 135 cows, or 22.22 per cent, due undoubtedly to late calf dropping.

Auburn, 9/2-, 11/5/1934

Screw worm flies were observed about hospital. Dr. Macady* informed me that they have always had the screw worm fly here and that he has treated wormy cases for years. Two cases in calves were reported since Sept. 20. Maggot cases were also reported for July and August of 1929.

Daneville, 10/26/1934

No definite cases reported but supposed to be some in extreme southwestern border of county.

10/27/1934

The native citizenship never heard of nor over saw the horse worm before three weeks ago, or about October 25th. Here the farmers were using chloroform and other run pins for the horse worm medicine. Several worm cases were personally examined 14 miles east of Elko. Two out of three jacks of oxen were infested in skin on belly and legs. These oxen were in normal service hauling logs. Three bags out of 10 head were infested, heavy and mottled. No relief cattle in country.

Union Springs, 10/27/1934

Five thousand relief cattle were shipped into this country, but the horse worm fly was here before the relief cattle. There were no cases out of 180 cows, or 5.5 per cent infested, whereas of the native cattle there were reported 10 cases out of 175 cows, or 5.7 per cent, the undoubtedly to late calf dropping.

11/5/1934

Barrow worm flies were observed about November 1st. Dr. Macgregor informed me that they have always had the horse worm fly here and that he has treated many cases for years. Two cases in calves were reported since Sept. 20. Several cases were also reported for July and August of 1933.

10/26/1934

No definite cases reported but supposed to be some in extreme southwestern border of country.

Huntsville, 11/5/34

- 10 -

Two cases reported, one a week ago and the other about two weeks ago, approximately October 23rd.

Rockford, 10/26/1934

No cases reported except one single case in extreme southwestern corner of county.

Centerville, 10/25/34

Screw worm present as there were 3 cases reported for October, these not severe.

Gadsden, 11/5/34

Mr. B. F. Wharton, Route 1, had a case in the ear of a hog about October 25th. The sore was estimated at about $1\frac{1}{2}$ inches in diameter. Medicine used was as usual the home remedies consisting of turpentine, kerosene, and creosote disinfectant. Mr. and Mrs. Crossfield of Gadsden had 45 head of sheep but not a single case of worms. Apparently the above case is the only recorded infestation.

Huntsville, 11/5/34

Two cases reported, one a week ago and the other about two weeks ago, approximately October 23rd.

Boaz, 11/5/34

Four cases of screw worms reported as occurring about Nov. 5, 1933. These cases were in horned cattle. The fly was described as a shining green, possibly Lucilia sp. No cases known for 1934.

Hamletville, 11/5/34

Two cases reported, one a week ago and the other about two weeks

ago, approximately October 27th.

Rockford, 10/26/34

No cases reported except one single case in extreme southwestern

corner of county.

Genevieve, 10/25/34

Some cases present as there were 3 cases reported for October,

these not severe.

Oshtemo, 11/5/34

Mr. E. E. Newton, Route 1, had a case in the ear of a hog about

October 25th. The case was estimated at about 1 1/2 inches in diameter.

Medicine used was as usual the home remedies consisting of turpentine.

Raymond, and several distinguished. Mr. and Mrs. Crossfield of Oshtemo

had 1/2 head of sheep but not a single case of worms. Apparently the above

case is the only reported infestation.

Hamletville, 11/5/34

Two cases reported, one a week ago and the other about two weeks

ago, approximately October 27th.

Boon, 11/5/34

Four cases of severe worms reported as occurring about Nov. 2, 1934.

These cases were in shorn cattle. The fly was described as a whitish

green, possibly facialis sp. No cases known for 1934.

Albertville, 11/5/1934

One native male had a case of screw worm in a wound on the left front leg, a barb wire cut. Two hundred maggots were removed on about the 20th of October. A few of these maggots were kept by the County Agent and given to me. Male was at Huntsville. Bishopp No. 14179.

Asheville, 11/3/1934

There were no relief cattle in this hilly country. A banker, a County Agent, and farmers were interviewed. They knew of no cases, and had never heard of maggots or screw worms before.

Tuscaloosa

A single male fly observed but not captured. The wormy cases were healing, no maggots; animals brought in from near Eutaw where the pest is common. A herd of 35 native cattle, white faced calves 9-10 months old, were carefully examined but not a single case of worms and not a single fly was observed on the animals, fences, weeds, or fresh droppings.

Eutaw, 10/25/1934

No screw worm cases were known of until about the middle of August when relief cattle were shipped in. Out of 400 head, 50, or 12½ per cent were infested. At the present date the trouble is as bad or worse than at DeKalb, Mississippi.

Albany, 11/2/1936

One native who had a case of some sort in a town on the left front is a very old man. Two hundred people were removed on about the 20th of October. A few of these people were kept by the County Agent and given to me. This was at Albany, Bishop No. 1017.

Albany, 11/2/1936

There were no other cattle in this hill country. A number of County Agents and farmers were interviewed. They knew of no cases and had never heard of any case or cases before.

Albany, 10/2/1936

A single case was observed but not reported. The county agent was hearing, an agent animal was in from near there where the best is common. A herd of 25 native cattle, white faced calves 2-10 months old, were carefully examined but not a single case of worm and not a single fly was observed on the animals, fences, weeds, or trees.

Albany, 10/2/1936

No other cases were known of until about the middle of August when other cattle were shipped in. Out of 100 head, 50, or 100 per cent were infected. At the present date the trouble is as bad or worse than at Albany, New York.

York, 11/3/1934

Locally 7 to 10 per cent of the animals were infested. No cases reported before relief cattle were shipped in, but rather severe now.

Florence

The County Agent knew of no cases whatever occurring in his County, but knew about the screw worm maggots.

10/12/1937

Locality 1 is 10 per cent of the estate was interested. No cases reported before relief call is were shipped in, but when

10/12/1937

The County Agent knew of no cases whatsoever occurring in his County, but knew about the survey from reports.

A survey was made of the County and the results were as follows:

The survey was made of the County and the results were as follows:

The survey was made of the County and the results were as follows:

The survey was made of the County and the results were as follows:

The survey was made of the County and the results were as follows:

The survey was made of the County and the results were as follows:

The survey was made of the County and the results were as follows:

The survey was made of the County and the results were as follows:

The survey was made of the County and the results were as follows:

TENNESSEE

After having found a trace of the screw worms in northeastern Alabama, it was deemed wise to turn north into Tennessee. Nothing was reported for Fayetteville by the County Agent and his assistant, but at Shelbyville, Tennessee, the screw worms were reported as occurring yearly during the months of July and August. It was carefully estimated that there were ten cases of wool maggots to one case of screw worms reported to the County Agent. The County Agent, Mr. C. P. Barrett, raises quite a few sheep. All through this hilly country the Southdown is the predominating breed although there are a good many Hampshires being introduced. The sheep industry in Tennessee is based entirely upon the early lambs for the market, hence time of breeding is regulated. There are quite a number of goats raised for food consumption only.

Murfreesboro, 11/6/1934

Here there is sheep trouble every year. All sheep must be watched daily to prevent and control screw worm and wool maggots. According to Nathan Lowe, August is the worst month of the year. More screw worm trouble than wool maggots which come in July and August. Oestrus ovis is also reported as giving a lot of trouble.

THUNDERBOLT

After having found a trace of the same worm in northern Alabama, it was deemed wise to turn north into Tennessee. Nothing was reported for Fayetteville by the County Agent and his assistant, but at Shelbyville, Tennessee, the same worm was reported as occurring yearly during the months of July and August. It was carefully estimated that there were ten cases of wool maggots to one case of cater worms reported to the County Agent. The County Agent, Mr. C. T. Harvitt, raises quite a few sheep. All through this hill country the Southdown is the predominating breed although there are a good many Hampshire being introduced. The sheep industry in Tennessee is based entirely upon the early lamb for the market, hence time of breeding is regulated. There are quite a number of goats raised for food consumption only.

Thunderbolt, 11/16/1934

Here there is sheep trouble every year. All sheep must be watched daily to prevent and control screw worm and wool maggots. According to Nathan Jones, Agent in the worst month of the year. More screw worm trouble than wool maggots which come in July and August. Scabies also is also reported as giving a lot of trouble.

Columbia, 11/6/1934

Five per cent of the sheep are considered as being infested with crew worm or wool maggots. August is considered as the worst month. One of the workmen in the College Branch Experiment Station reported that the chickens would often follow the sheep to pick up the creepers (maggots) as they would drop to the ground. This being election day, the Sup't., Mr. L. R. Niel, and the Herdsman, Mr. E. B. George, were in Columbia and Nashville, respectively.

This branch of the Knoxville Experiment Station consists approximately of a square mile or more of land, the principal investigations being animal husbandry research.

Selmer, 11/7/1934

No animals, no relief cattle, and no cases of screw worms reported. Natives had never heard of a case. Cotton appears to be the only industry.

Bolivar, 11/7/34

No cases reported for 1934, but one case for 1932.

Union City

Mr. R. H. Bond of Union City reports that he had many cases in hogs in 1932 and that every scratch or wound was followed by a screw worm infestation. Pigs and sows suffered the most. July and August he considered as the worst months.

Olive County is considered quite a livestock County.

Columbia, 11/6/1934

Five per cent of the sheep are considered as being infected with
crystalline or wool mite. Mites are considered as the worst menace. One
of the reasons in the United States Experiment Station reported that the
sheep would often follow the sheep to pick up the mites (mange)
as they would drop to the ground. This being the case, the Dept. of
Agriculture, and the Bureau of Animal Industry, were in Columbia and
Knoxville, respectively.

This branch of the Knoxville Experiment Station consists approximately
of a square mile or more of land, the principal investigations being
animal husbandry research.

Knoxville, 11/7/1934

No malarial, no rabbit, and no cases of other worms reported.
Native had never heard of a case. Cotton appears to be the only industry.

Knoxville, 11/7/34

No cases reported for 1934, but one case for 1932.
Union City
Mr. R. E. Bond of Union City reports that he has many cases in dogs
in 1932 and that every condition of animal was followed by a water worm in
fection. This and some mites the most. July and August he considered
as the worst months.

Oliver County is considered quite a livestock country.

Bureau of Entomology and Plant Quarantine

Somerville, 11/7/1934

No cases of screw worms were reported for 1934. Mr. W. F. Latka, born and reared at Somerville, Tennessee, but worked cattle in the Texas Panhandle in the early days stated that he had wormy cases in hogs for the past 40 years, and that this always occurred at castration time, but that this year, 1934, he did not have a single case. He also reported that at Hickory Witac, Tennessee, the sheep went crazy from the grub in the head, but this trouble is very likely caused by the bladder tape worm.

Memphis, 11/7/1934

One fly was captured about 5 miles east of city limits of Memphis.

Memphis, 11/17/33

No cases of acute worms were reported for 1933. Mr. W. F. Latham, born and reared at Memphis, Tennessee, but worked cattle in the Texas Panhandle in the early days stated that he had never seen in boys for the past 10 years, and that this always occurred at certain times, but that this year, 1933, he did not have a single case. He also reported that at Hickory Ridge, Tennessee, the sheep were free from the grub in the head, and this condition very likely caused by the blaster tape worm.

Memphis, 11/17/33

One fly was captured about 2 miles east of city limits of Memphis.

ARKANSAS

Turrell, 11/8/1934

The ranchman visited was an old timer living between Turrell and the Mississippi River Lyke. He now runs approximately 300 head of cattle. He reports no worm trouble and states that he has never had a case of maggots.

Marked Tree, 11/8/1934

The local Veterinarian, a graduate, practices within a radius of 20 to 30 miles and states that he has never known of a case in his territory, but that I might find some in the hill country west.

Harrisburg, 11/8/34

County Agent R. Y. McGill states that some years they have no trouble but will occasionally have a few cases in pigs. In the hill country south from Harrisburg are 8000 head of relief cattle. Approximately 25 out of 2000 are wormy, or 1 $\frac{1}{4}$ per cent. These cattle were branded at Kansas City with the liquid cold branding paint. The burning effect continued after arrival in Harrisburg. A few of the wormy cases followed Hypoderma in the back.

Camden

The County Agent at Harrisburg informed us that his home was at Camden, Ark., and that they had considerable trouble with worms in the toes of pigs.

Forrest City, 11/8/34

County Agent reported that they had screw worm trouble with pigs every year, that it was a common ailment, that the trouble was in the summer and that the pigs had to be taken care of or lost.

ALABAMA

Turkey, 11/8/34

The ranchman stated that he had been living between Turkey and the Mississippi River for 15 years. He now runs approximately 700 head of cattle. He reports no more trouble and states that he has never had a case of

Harlem, 11/8/34

The local veterinarian, a graduate, practices within a radius of 20 to 30 miles and states that he has never known of a case in his territory. But that I might find some in the hill country south.

Harlem, 11/8/34

County Agent E. Y. McGill states that some years ago they have no trouble but will occasionally have a few cases in pigs. In the hill country south from Harlem was 8000 head of raised cattle. Approximately 25 out of 2000 are sows, or 15 per cent. These cattle were branded at Kansas City 150 days in mid cold branding point. The branding effort continued after arrival in Harlem. A few of the sows followed up on the back.

Harlem

The County Agent at Harlemburg informed us that his home was at Harlem, Ark., and that they had considerable trouble with worms in the loss of pigs.

Fortress City, 11/8/34

County Agent reported that they had some worm trouble with pigs every year, that it was a common ailment, that the trouble was in the summer and that the pigs had to be taken care of or lost.

MISSISSIPPI

Corinth, 11/7/1934

Dr. W. L. Traup, an Auburn graduate, has lived at Corinth, Miss., for 21 years and states that there are no relief cattle in that part of Mississippi. He stated that a traveling minister driving a mule went through Corinth about the 15th of October, 1930. Three other vets had passed up the case since it was a charitable case, but that he wanted to know what the trouble was, why the mule could not urinate properly after a former treatment. Later he found the sheath badly infested with maggots. He removed a double handful of maggots and cured the case. The maggots as he well remembered them were great big long ones. Apparently these were Sarcophagids, probably S. robusta. In July 1933 he reports that there were three or four cases but no more since not before while he has lived there.

Tunica, 11/8/1934

The County Agent reported no animals in this cotton county, not even hogs, and no worms or maggot cases.

Lula, 11/8/34

No wormy cases reported.

MISSISSIPPI

Correspondence, 11/1/37

Mr. J. L. Tamm, an Auburn graduate, has lived at Corinth, Miss.

for 21 years and states that there are no killed birds in that part of

Mississippi. He stated that a traveling minister during a recent visit

went through Corinth about the 15th of October, 1936. Three other visits

had passed up the case since it was a short-billed case, but that he wanted

to know what the trouble was, why the birds could not reproduce properly

after a former treatment. Later he found the choate badly infested with

mosquitoes. He removed a double handful of mosquitoes and cured the case.

The mosquito as he well remembered them were great big long ones. Apparently

these were trichopneustes, probably trichopneustes. In July 1937 he reports that

there were three of four cases but no more since not before while he has

lived there.

Tamale, 11/18/37

The County Agent reported no animals in this section early, not even

hogs, and no worms or insects of any kind.

Tamale, 11/18/37

No worms or insects reported.

Tamale, 11/18/37

County Agent reported that there were no insects or worms in this section

early, not even hogs, and no worms or insects of any kind.

The Agent has to be sure that the insects are not the same as those

Senatobia, 11/9/1934

In this hilly country there were five cases or $\frac{1}{2}$ per cent out of 111 relief cattle infested, this occurring shortly after the first of October. Another farmer reported maggots in pigs and in animals having cuts during the hot season, July and August, especially following rains. The above cases were reported 6 and 12 miles east of Senatobia.

P.S. It was difficult to dig out information from the natives in this territory. OGB

Grenada, 11/9/34

Mr. W. F. Martin, a stock raiser, has had considerable trouble with screw worms. Mr. Martin was the first man to report screw worm cases. He raises a good many sheep and claims that he has trouble with grub in the head. There are 5000 relief cattle in this County, according to County Agent Cooley. The County Agent was supplied with two gallons each of benzol and pine tar oil from Mr. D. C. Paxman.

Greenwood, 11/9/1934

Screw worm cases were reported as occurring in 1932, probably none in 1933, and in 1934 none except a single case in a mule just a few days before a recent norther blew in, about two weeks ago.

Continued, 11/19/36

In this county there were five cases of H. per cent out of 111 killed cattle infected, this occurring shortly after the first of October. Another farmer reported one case in pigs and in calves having been during the hot season, July and August, especially following rains. The above case were reported to and 15 miles west of Nashville.

P. S. It was difficult to get out information from the natives in this territory. OWS

Continued, 11/19/36

Mr. J. Martin, a stock raiser, has had considerable trouble with swine fever. Mr. Martin was the first man to report swine fever. He raises a good many swine and claims that he has trouble with pigs in the fall. There are 5000 killed cattle in this county, according to county agent Coyle. The County agent was supplied with two gallons each of formal and lime for all from Mr. J. C. Johnson.

Continued, 11/19/36

Some more cases were reported as occurring in 1935, probably none in 1936, and in 1937 none except a single case in a mile just a few days before a recent outbreak here in, about two weeks ago.

Natchez, 10/3/1934

Detailed information in Parman's report. M. P. Jones and Babcock found through County Agent L. C. Strahn that the Parker Bros. ranch extended into three counties and that these men were running between 7000 and 8000 head of native cattle. On W. E. Compton's place near town 40 head of cattle were branded with 39 cases of screw worms resulting.

Gulfport, 9/27/1934

On a farm 20 miles north and a little east, the owner claimed positively that the death loss he sustained in sheep as a result of screw worms was 75 out of 200 head, or $37\frac{1}{2}$ per cent.

Cocksville

Branding paint was used by Jim Sparkman with the result that it burned the flesh, the sores being followed by screw worms.

Hatchery, 10/17/34

Detail information in Bureau's report. M. P. Jones and Robinson
found through County Agent J. G. Strain that the Foster Bros. ranch ex-
tended into these counties and that there were several between 1900
and 1905 head of native cattle. On M. E. Campbell's place near town 10
head of cattle were branded with 39 cases of seven white female calves.

California, 9/17/34

On a farm 20 miles north and a little east, the owner claimed
positively that the death loss he sustained in sheep as a result of
sore was 1/2 out of 200 head, or 37 1/2 per cent.

California

Brandings given was used by the speaker with the result that it
branded the flock, the owner being followed by seven horses.

EDUCATIONAL

This consisted of two methods; one being to give lectures at meetings called by the County or District Agents, this followed by actual treatment of one or more animals infested with screw worms. Trained men were employed and trained in methods of treatment as well as the technical life history of the parasite. These men would then carry on the educational work and supervise distribution of medicine in the separate counties through the County Agents. The other method was to give out reliable information at State, County, and Local Fairs, where possible.

The medicines, 90 per cent benzol, a killer, and dehydrated pine tar oil sp.g. 1.065, a repellent, were distributed in amounts varying from two ounces to pints and quarts, all depending upon the number of animals and the number of wormy cases. This was most excellent logic for in this way all were made familiar with standardized recommended medicines before patent and unreliable medicines could gain a foothold. The example was most striking, for in Mississippi not a single patent medicine for screw worms came to the author's attention, whereas in Alabama one medicine was gaining a foothold rapidly. Fortunately, this medicine, consisting of a mixture of benzol, chloroform, and pine tar oil was giving very good results.

EXHIBITION

This consisted of two methods: one being to give lectures at meetings called by the County or District Agents, this followed by actual treatment of one or more animals infected with screw worms. Trained men were employed and treated in methods of treatment as well as the technical life history of the parasite. These men would then carry on the educational work and supervise distribution of medicine in the separate counties through the County Agents. The other method was to give out reliable information at State, County, and local fairs, where possible.

The medicine, 50 per cent benzene, a dilute, and dehydrated lime for all ages, 1.00%, a repellent, were distributed in amounts varying from two ounces to quarts and quarts, all depending upon the number of animals and the number of worm masses. This was most excellent for in this way all were made familiar with standard procedures. Medicines before potent and available medicines could gain a foothold. The example was most striking, for in Mississippi not a single potent medicine for worm worms came to the farmer's attention, whereas in Alabama the medicine was gaining a foothold rapidly. Fortunately, this medicine, consisting of a mixture of benzene, chloroform, and pine for others living very good results.

As we did not have charge of the work in Alabama the method was different. Here the state Veterinarian was in full charge. An impossible attempt was made to eradicate the fly by carcass destruction, the major part of the work centering in Washington, Mobile, and Baldwin Counties.

Prof. J. M. Robinson, with the assistance of the Veterinary and Extension Departments' condensed the circular on screw worms and mailed quantities to County Agents in infested territory. Prof. Robinson also mailed questionnaires to all Agents relative to the screw worm fly situation. This educational program from Auburn had its effect, for in my survey it was noted that benzol especially and pine tar oil were known and becoming quite popular. Chloroform was quite commonly used by Veterinarians, however, benzol was becoming quite popular with them.

As we did not have charge of the work in Alabama the meeting

was different. Here the state veterinarian was in full charge. In

possible circumstances was made to establish the fly by various districts.

The major part of the work conducted in Washington, Mobile, and Baldwin

Counties.

Prof. J. M. Robinson, with the assistance of the Veterinary and

Extension Department, conducted the studies on horse farms and mailed

questionnaires to County Agents in infested territory. Prof. Robinson also

mailed questionnaires to all Agents relative to the horse worm fly.

This educational program from which much has been learned, has in

my survey it was noted that horses especially and also cow all were known

and becoming quite popular. Chickens were quite commonly used by Veteri-

narians, however, horses were becoming quite popular with them.

The in this way all were made to know that the horse worm fly was a pest.

The in this way all were made to know that the horse worm fly was a pest.

The in this way all were made to know that the horse worm fly was a pest.

The in this way all were made to know that the horse worm fly was a pest.

The in this way all were made to know that the horse worm fly was a pest.

The in this way all were made to know that the horse worm fly was a pest.

The in this way all were made to know that the horse worm fly was a pest.

The in this way all were made to know that the horse worm fly was a pest.

FAIRS, NOTES ON

Jackson, Mississippi, one week - October 8 - 13, 1934

Photographs were taken by Jones and Babcock, enlargements made, and other photographs from Washington were arranged, with explanatory notes, on inclined tables. The arrangement was made to show life history, cases, treatments, and methods of control.

The crowds varied from day to day, but actual counts gave the following figures:

People studying pictures							
Date	Hours	White men	Wh. women	Negro men	Neg. women	Total	Time
Oct. 8	11:55 a.m. to 2:30 p.m.	65	59	1	2	153	2hr. & 35 min.
	3 to 4 p.m.	25	40	0	4	69	1 hr
Oct. 13	1:35 to 2:35 p.m.	230	270	1		231	1 hr

Estimated No. people studying pictures, based on above figures		
Date	No. People	Remarks
Oct. 8	710	
9	50	Raining
10	500	
11	714	
12	2760	The big day - a tremendous crowd
13	500	Average crowd
Total 6 days	5234	

Laurel County Fair, or better known as South
Mississippi Fair.

This was really more of a commercial Fair than an educational, but even at that the majority of the attendants were farmers. The big day was on Oct. 23, 1934, when the schools were all turned out. A count was made of the people at the screw worm fly booth from 11 a.m. to 12 noon. There were 36 women, or 27 per cent, studying the exhibit, 58 men, or 41 per cent, 46 children, or 32 per cent. The children were mainly of high school age. The total estimated observers for the day was 1278 or for a five day period conservatively estimated at 4378. This exhibit differed from the Jackson State Fair exhibit in that a beaver board outline of a cow was painted and the life of the screw worm fly exhibited by means of soil, grass, and vials containing actual specimens of the fly, larvae in animal and in soil, pupae, and fly emerging from puparium. By means of a cotton string the complete cycle of the life history was shown. This attracted considerable attention.

From here the exhibit was moved to the Gulfport Fair and one or two more.

Several remarks by the farmers as they viewed the exhibit, were recorded, as follows:

1. There were many screw worms 30 to 35 years ago
2. Never had them before
3. Screw worm is a new pest
4. Have always had them here
5. Thirty-five years ago I killed them with chloroform and calomel also carbolic, turpentine, and turpentine plus creosol.
6. Relief cattle brought the screw worm here
7. Relief cattle did not bring the screw worms here
8. They were here last year
9. Had them here 15 years ago
10. Kept the flies away with vaseline and pine tar oil

Samuel Gundry Fair, or better known as South
Massachusetts Fair.

This was really one of a comparatively fair show on educational
but even at that the majority of the students were farmers. The big
day was on Oct. 25, 1914, when the schools were all turned out. A
count was made of the people at the school and the result from 11 a.m.
to 12 noon. There were 78 women, or 47 per cent, attending the exhibit,
28 men, or 14 per cent, 46 children, or 28 per cent. The children were
mainly of high school age. The total estimated observers for the day
was 1275 or for a five day period conservatively estimated at 5775.
This exhibit differed from the Jackson State Fair exhibit in that a
beaver box containing a number of skins was exhibited and the life of the beaver
was explained by means of a series of slides, films, and a series of
specimens of the life, leaves in animal and in soil, pupae, and life
stages from pupae. By means of a motion picture the complete cycle
of the life history was shown. This attracted considerable attention.
From these the exhibit was moved to the Gallopers Fair and one or
two more.

Over 1000 people by the farmers at they visited the exhibit, and
interested, as follows:

1. There were many more women 10 to 15 years ago
2. Never had them before
3. Green women is a new fact
4. How always had them here
5. Thirty-five years ago I killed them with chloroform and alcohol
6. Also captured, suspended, and suspended plus alcohol
7. Killed and brought the green women here
8. Killed and did not bring the green women here
9. They were here last year
10. Had them here 15 years ago
11. Keep the flies away with vasoline and pine tar all

CAUSES OF SCREW WORM INFESTATIONS

Any type of wound that will draw blood, or a blood smear over sound tissue, is sufficient to cause the fly to deposit blows. The most common causes were found to be dropping young during the fly season, navel, cuts, scratches, ear tags, Gulf Coast ticks, snag injuries, fire and paint brands, horn injuries, warts, and mouth and feet injuries. The rarer cases consisted of sheath and ox-wartle attack.

ANIMALS ATTACKED

Most any animal is subject to attack. The known animals are man, cattle, horses, mules, sheep, goats, hogs, dogs, and rarely - chicken and cat.

Number and Per Cent of Animals Attacked

These figures are taken from B. C. Parman's report for Mississippi for the period September 11th to October 31st., inclusive. Records were kept for twenty counties where 8078 parties were furnished with medicine. A total of 337,302 animals came under the supervision of the U. S. Bureau of Entomology and Plant Quarantine. Of this number, there were 41,533 wormy animals, or 12.31 per cent of all animals. By considering each group there were, as follows:

CAUSES OF SWINE FEVER INFECTIONS

any type of wound that will draw blood, or a blood smear over

exposed tissue, is sufficient to cause the fly to deposit blood. The

most common means of transmission is by the fly depositing blood on the

animal, or on a feed trough, or on a feed bucket, or on a feed

trough, or on a feed trough, or on a feed bucket, or on a feed

trough, or on a feed trough, or on a feed bucket, or on a feed

THE SWINE FEVER VIRUS

Most any animal is subject to attack. The known animals are

man, cattle, horses, swine, sheep, goats, dogs, cats, and birds.

chickens and cats.

Incubation and Period of Infection

These figures are taken from a report by the

for the period September 1st to October 31st, inclusive. Records were

kept for twenty consecutive days 80% of the cases were followed with isolation.

A total of 37,702 animals came under the supervision of the U. S. Bureau

of Entomology and Plant Quarantine. Of this number, there were 11,517

very small, or 12.5% per cent of all animals. By considering each

group there were, as follows:

1. These were very small, or 12.5% per cent of all animals.

2. These were very small, or 12.5% per cent of all animals.

3. These were very small, or 12.5% per cent of all animals.

4. These were very small, or 12.5% per cent of all animals.

5. These were very small, or 12.5% per cent of all animals.

6. These were very small, or 12.5% per cent of all animals.

7. These were very small, or 12.5% per cent of all animals.

8. These were very small, or 12.5% per cent of all animals.

9. These were very small, or 12.5% per cent of all animals.

10. These were very small, or 12.5% per cent of all animals.

Cattle ----	11	per cent infested with screw worms
Sheep	15	" "
Goats	6	" "
Horses and		
Mules	9	" "
Hogs	11	" "
Dogs	14	" "
Chicken -		Trace
Cats		Trace

There was distributed among the farmers, whites and negroes, 72,516 ounces, or 4532 pounds of 90 per cent benzol and 73,751 ounces, or 4609.43 pounds of dehydrated pine tar oil, sp. g. 1.065. Of the 41,533 animals having screw worms not a single complaint of any injury to the animals from use of medicines was ever reported. The above figures do not include relief cattle. The F. E. R. A. of Mississippi furnished gratis all benzol and pine tar oil needed for such cattle.

METEOROLOGICAL

Mr. B. C. Parmen of Uvalde, Texas, has probably done more work on the relation of weather condition to screw worm fly abundance than any one else. He finds that the fly is inactive at around 65° F and that the larvae are inactive at 60° F and that if the soil remains at 50° F a sufficient length of time the maggots will not mature. The soil temperature no doubt has a direct bearing upon the over wintering of the larvae and pupae. Fortunately, through the kindness of Mr. K. L. Cockerham of Biloxi, Miss., temperature records were secured for the Foley, Alabama soil. The thermometer was kept in loose but firm soil at a depth of 4 inches. The maximum and minimum records are hereby listed:

Cattle	11 per cent infested with screw worms
Sheep	12 "
Horses	0 "
Horses and	0 "
Mules	0 "
Hogs	11 "
Pigs	10 "
Children	0 "
Cats	0 "

There was distributed among the Yavapai, Maricopa and Mohave, 12,516 ounces, or 457 1/2 pounds of 90 per cent benzol and 77.75 ounces, or 460.47 pounds of dehydrated pine tar oil, at 1.00. Of the 41,577 animals having screw worms not a single complaint of any injury to the animals from use of medication was ever reported. The above figures do not include relief of other diseases of the animals. The above furnished gratis all benzol and pine tar oil needed for each cattle.

ENTOMOLOGICAL

Mr. J. G. Pearson of El Paso, Texas, has given his dome more work on the relation of weather conditions to screw worm fly abundance than any one else. He finds that the fly is inactive at around 65° F and that the larvae are inactive at 60° F and that if the soil remains at 50° F a sufficient length of time the maggots will not mature. The soil temperature has no doubt has a direct bearing upon the overwintering of the larvae and pupae. Fortunately, through the kindness of Mr. E. H. Goddard of El Paso, Texas, temperature records were secured for the winter. The thermometer was kept in loose but firm soil at a depth of 4 inches. The maximum and minimum records are hereby listed:

MISCELLANEOUS INSECTS

Haematobia irritans (Horn Fly)

DeKalb, Miss., 10/25/1934

From 100 to 500 flies per animal. The flies were considered bad at this time, but are reported worse during dry seasons.

Tuscaloosa, Ala., 10/25/1934

All horses, mules, and cows in a large horse barn having a low ceiling, were covered with horn flies. In number each animal was harboring approximately 150 to 500 flies. Examination of 35 white face cattle showed that there were often 10 to 500 horn flies per animal. A single black cow, Aberdeen Angus, retained the greatest number.

Montgomery, Ala., 9/19/1934

A herd of Ayrshire cattle on state prison dairy was kept spotlessly clean. Most of the flies attached to bellies. Two cows retained from 300 to 400 flies each, while the rest of the herd only retained a trace. No flies observed on backs and necks nor at base of horns.

Gulfport, Miss/ 9/27/1934

A few cases were observed to be rather heavily infested; they retaining from 300 to 700 flies per animal, while the rest of the herd had from none to 10 per animal.

MISSOURI WILDLIFE SERVICE

Thomomys talpae (Horn 1917)

Thomomys, Miss., 10/25/1937

from 100 to 500 flies per animal. The flies were considered bad at this time, but not reported until during dry seasons.

Thomomys, Miss., 10/25/1937

All horses, mules, and cows in a large horse barn having a low ceiling, were recovered with horn flies. In summer each animal was harboring approximately 100 to 500 flies. Examination of 25 flies from cattle showed that there were often 10 to 500 horn flies per animal. A single black cow, therefore, was the greatest nuisance.

Thomomys, Miss., 9/12/1937

A herd of Virginia cattle on state prison dairy was kept spotlessly clean. Most of the flies attached to bellies. Two cows retained from 100 to 500 flies each, while the rest of the herd only retained a trace. The flies observed on backs and necks were as bad as horses.

Thomomys, Miss., 9/27/1937

A few cases were observed to be rather heavily infested they retained from 100 to 700 flies per animal, while the rest of the herd had from none to 10 per animal.

Thomomys, Miss., 9/27/1937

Stomoxys calcitrans

Montgomery, Ala., 9/14/1934

Out of 25 Ayrshire animals observed on the prison farm daily there were an average of four stable flies per animal.

Musca domestica

Jackson, Miss., 10/8- 13/1934

At the relief stock pens 16 miles southeast of Jackson the house fly greatly predominated. There were from 20 to 150 flies about each worn wound or exposed sore. Very few screw worm flies were observed.

Montgomery, Ala., 9/19/34

House flies were observed to be very scarce in and about Auburn and Montgomery, Ala.

Aleurodes sp.

Hattiesburg, Gulfport Miss., 9/27/1934

Flies observed to be quite numerous in both cities. The automobiles were well spotted with them, and men were slightly annoyed.

Hypoderma lineatum

Uriah, Ala., 10/28/34

Natives reported that the wolves (warbles) have been present for the past two weeks. No cases were actually observed. Many cattle observed from Uriah to Foley, but not a single case of ox-warble could be found.

Domestic Animals

Montgomery, Ala., 2/12/34

Out of 27 animals observed on the farm daily

there were an average of four stable flies per animal.

Domestic Animals

Jackson, Miss., 10/2-12/33

At the stable there were 15 miles southeast of Jackson the houses

fly greatly predominated. There were from 20 to 150 flies about each

one found or exposed some. Very few were seen near the house.

Montgomery, Ala., 2/12/34

House flies were observed to be very common in and about houses

and Montgomery, Ala.

Domestic Animals

Hattiesburg, Mississippi, 2/12/34

Flies observed to be quite numerous in both sides. The animals

were well sheltered from them, and were slightly annoyed.

Domestic Animals

Union, Ala., 10/2/33

Native reported that the native (white) have been present for

the past two years. In cases were actually observed. They were also

observed from Union to Selma, but not a single case of exposure could be

found.

MISCELLANEOUS

Screw worm

Reported in rams at Laurel, Miss., 6 miles west of town on farm of M. Walters, Route 1.

Sebastopol, Miss

Screw worms reported but not substantiated

Screw Worm Killer

This remedy was recommended by a Mississippi farmer. It consists of Colodium, Iodoform, and Bismuth, apparently in equal amounts.

Eye Gnats,

Somerville, Tenn., 11/3/1934

The eye gnats are reported as extremely bad during the spring plowing season.

Respectfully submitted,

O. C. Babcock
Asst. Entomologist
Coop. Texas Expt. Station

Cc- Dr. Bishopp
Mr. Farman
Prof. Robinson

MISSOURI

Some more

reported in June at Laurel, Miss., 6 miles west of town on
line of N. Orleans, Route 1.

Georgetown, Miss.

Some more reported but not substantiated

Some more Miller

This remedy was recommended by a Mississippi farmer. It
consists of Calcium, Iodine, and Bismuth, apparently in equal amounts.

The State

Somerville, Tenn., 11/21/34

The eye state are reported as extremely bad during the spring

giving reason.

Respectfully submitted,

O. O. Edwards
Assoc. Entomologist
Geop. Texas Exp. Station

Co- Mr. Bishop
Mr. Farnham

Prof. Robinson

1934 SCREW WORM CONTROL ORGANIZATION PLAN
FEDERAL

BUREAU OF ENTOMOLOGY - PLANT QUARANTINE
E.R.A. - B.A.I. - EXTENSION SERVICE

STATE

Funds
F.E.R.A.

Purchasing
Supplies

Salary
Expenses

State Leader
A Representative
Bur. Ent. & P.Q.

Working Unit
Extension Service

Co. District
Agt. Leader

Subject Matter
Specialists

District
Trained Specialist
Screw Worm Control

Law
State Depts.
(Veterinary
Agriculture
Entomology
Plant Board)

County

Special Agent

County Agent

Special
Assistance

Demonstrations
and Meetings

Issue Medicine

Highways
Railroads

Farmer

- Rural
Rehabilitation

Relief
labor

C.C.C.

Scouting, Treating, Burning
Breeding, Wound Precautions,
Trapping, Hospitalization

Treating F.E.R.A.
Cattle

Scouting
Burning carcasses
and Building chutes

Scouting for and
burning carcasses.
Transportation of
labor.

REPORT
RESEARCH
INSTITUTE
OF
STATISTICS
AND
ECONOMICS

1950

RESEARCH
INSTITUTE
OF
STATISTICS
AND
ECONOMICS

RESEARCH
INSTITUTE
OF
STATISTICS
AND
ECONOMICS

RESEARCH
INSTITUTE
OF
STATISTICS
AND
ECONOMICS

RESEARCH
INSTITUTE
OF
STATISTICS
AND
ECONOMICS

RESEARCH
INSTITUTE
OF
STATISTICS
AND
ECONOMICS

RESEARCH
INSTITUTE
OF
STATISTICS
AND
ECONOMICS

RESEARCH
INSTITUTE
OF
STATISTICS
AND
ECONOMICS

RESEARCH
INSTITUTE
OF
STATISTICS
AND
ECONOMICS

RESEARCH
INSTITUTE
OF
STATISTICS
AND
ECONOMICS

RESEARCH
INSTITUTE
OF
STATISTICS
AND
ECONOMICS

RESEARCH
INSTITUTE
OF
STATISTICS
AND
ECONOMICS

RESEARCH
INSTITUTE
OF
STATISTICS
AND
ECONOMICS

RESEARCH
INSTITUTE
OF
STATISTICS
AND
ECONOMICS

RESEARCH
INSTITUTE
OF
STATISTICS
AND
ECONOMICS

RESEARCH
INSTITUTE
OF
STATISTICS
AND
ECONOMICS

RESEARCH
INSTITUTE
OF
STATISTICS
AND
ECONOMICS

RESEARCH
INSTITUTE
OF
STATISTICS
AND
ECONOMICS

RESEARCH
INSTITUTE
OF
STATISTICS
AND
ECONOMICS

RESEARCH
INSTITUTE
OF
STATISTICS
AND
ECONOMICS

RESEARCH
INSTITUTE
OF
STATISTICS
AND
ECONOMICS

RESEARCH
INSTITUTE
OF
STATISTICS
AND
ECONOMICS

RESEARCH
INSTITUTE
OF
STATISTICS
AND
ECONOMICS

RESEARCH
INSTITUTE
OF
STATISTICS
AND
ECONOMICS